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United States
Department of
Agriculture

Soil
Conservation
Service

Spokane,
Washington



Water Supply Outlook for Washington

as of MARCH 1, 1984



TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: "Spring is on its way"

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

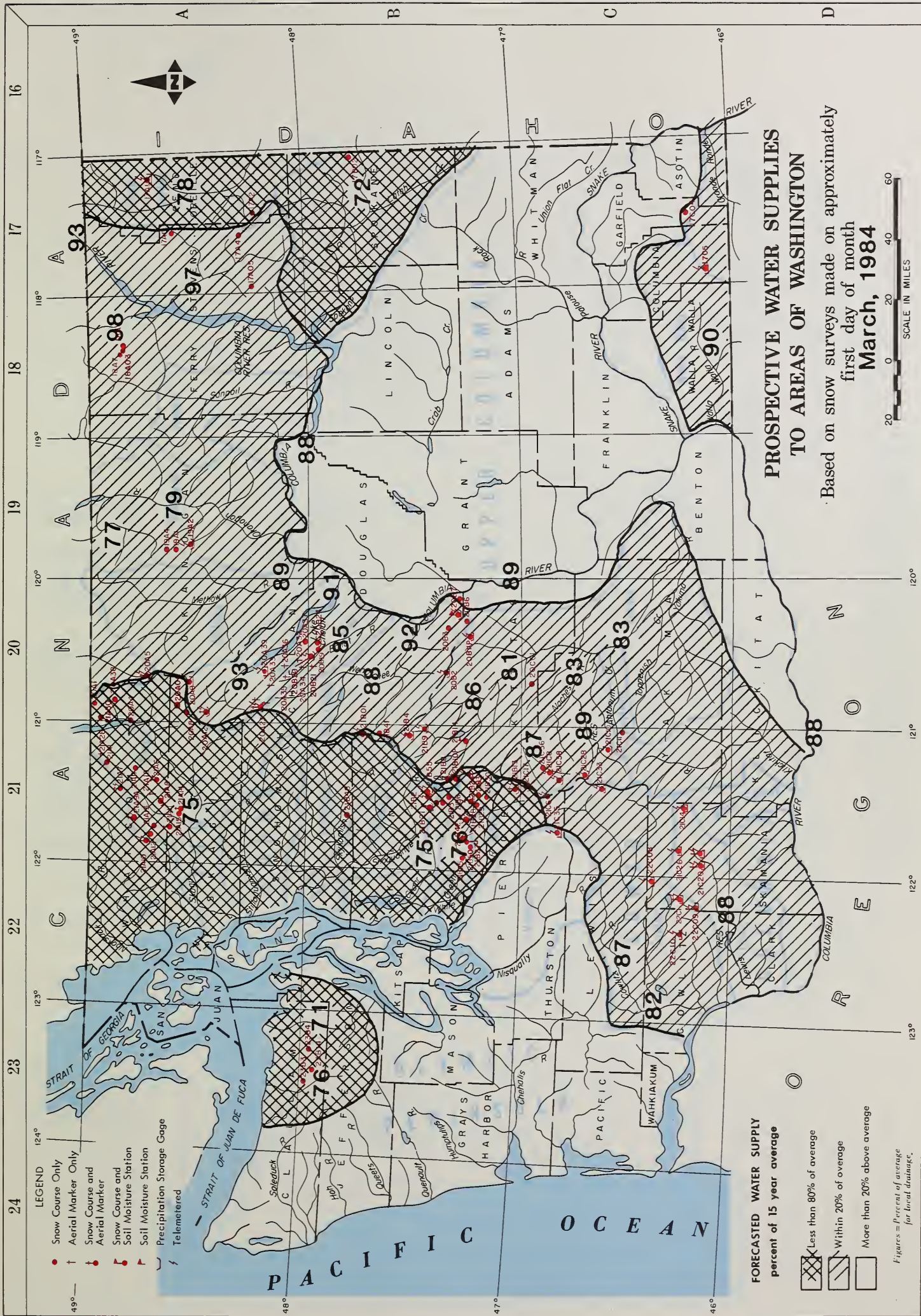
Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P.O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P.O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4402 Federal Bldg., 125 South State St., Salt Lake City, Utah 84147
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P.O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 — for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 — for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 — and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.





INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

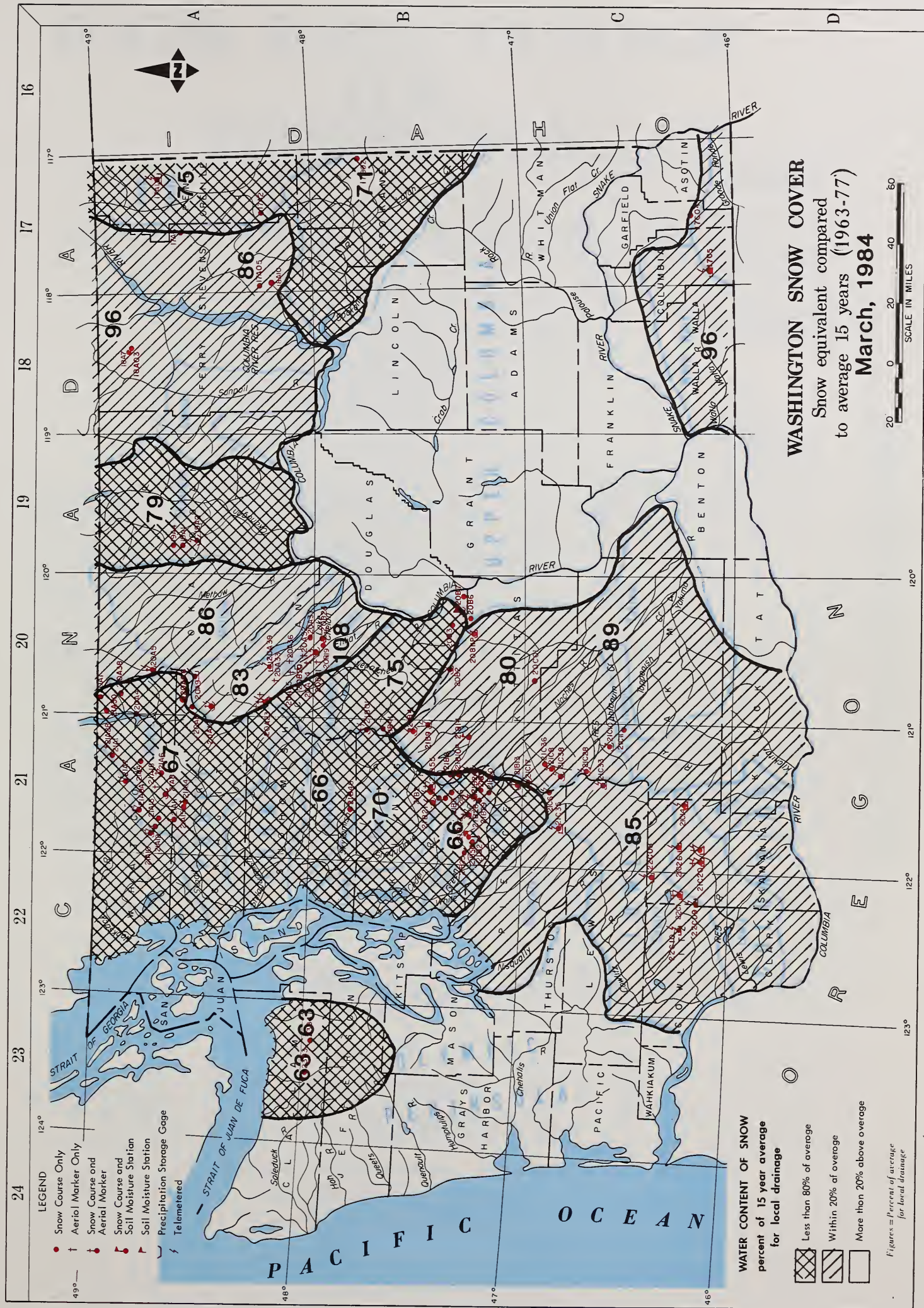
NAME	NUMBER	SEC.	TMP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TMP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE						LOWER COLUMBIA DRAINAGE					
Boyer Mountain Bunchgrass Meadow	17A2	7	31N	43E	5250	Spruce Springs	17C4	9	8N	40E	5700
	17A1SP	24	37N	44E	5000		17C5SP	6	7N	40E	5530
Summit G. S. Burke Creek Goat Creek	18A7	20	39N	35E	4600	June Lake Plains of Abraham Spencer Meadow Surprise Lakes	22C09SP	26	8N	5E	3200
	18A3	28	39N	35E	4070		22C26SP	8	9N	7E	3800
	18A4	26	39N	35E	3595		22C13SP	35	9N	5E	4400
Ragged Ridge	17B02	12	27N	45E	3333	Cayuse Pass Pigtail Peak Potato Hill Sheep Canyon Strawberry	21C14SP	16	8N	7E	3400
							21C13SP	14	7N	8E	4250
Baird Stranger Mountain Chewelah	17A6	19	36N	42E	3215	Cowlitz River	21C6	15	16N	10E	5300
	17A5	26	31N	38E	4990		21C33SP	11	13N	11E	5900
	17A4	11	32N	41E	4925		22C10SP	36	10N	10E	4500
Mutton Creek No. 1 Mutton Creek No. 2 Salmon Meadows	19A1	30	37N	24E	5700	Green River	21B24P	18	20N	11E	1800
	19A4	19	37N	24E	4000		21B25	27	21N	8E	1200
	19A2SP	33	37N	24E	4500		21B42SP	21	21N	9E	3200
Harts Pass	20A5SP	7	37N	18E	6500	Cedar River	21B27	14	20N	8E	2900
							21B28	12	20N	8E	2100
							21B29	36	20N	10E	3100
Lyman Lake Park Creek Ridge Rainy Pass Mirror Lake	20A23SP	18	31N	16E	5900	City Cabin Mt. Gardner	21B31	5	19N	11E	4700
	20A12SP	18	34N	16E	4600		21B10 SP	25	21N	11E	3860
	20A9SP	21	35N	17E	4780		21B30	18	19N	11E	4100
Entiat River	20A39	30	31N	18E	5600	Alpine Meadow Ollalie Meadows Ollalie Meadows East	21B48	31	27N	9E	3500
							21B2P	19	22N	11E	3625
							21B55SP	20	22N	11E	3700
Brief Entiat Meadows Entiat River Trail Fox Camp Pope Ridge Pope Ridge Snow Pillow Pugh Ridge Shady Pass Snow Brushy Tommy Creek	20B19	34	28N	19E	1600	Beaver Creek Trail Beaver Pass Brown Top Devils Park Freezeout Creek Trail Freezeout Meadows (New) Granite Creek Meadows Cabins New Hozomeen Lake Thunder Basin	21A4	35	39N	12E	2200
	20A33a	28	31N	17E	4540		21A1	9	39N	12E	3680
	20A34a	2	29N	17E	3325		21A28a	26	40N	12E	6000
Wenatchee River	20A36a	17	30N	18E	6510	Snoqualmie River	20A4	34	38N	16E	5900
	20B20	22	29N	18E	3540		20A1	14	40N	14E	3500
	20B24SP	22	29N	18E	6725		20A38	8	40N	16E	5000
Berne-Mill Creek (New) Blawie Pass No. 2 Stevens Pass Trough #2	20A32a	34	30N	18E	6725	City Cabin Mt. Gardner	21B48	31	27N	9E	3500
	20A37	20	30N	19E	6200		21B2P	19	22N	11E	3625
	20A35a	21	30N	17E	3910		21B55SP	20	22N	11E	3700
Squilchuck Creek	20B21a	10	28N	18E	4900	Alpine Meadow Ollalie Meadows Ollalie Meadows East	21B48	31	27N	9E	3500
							21B2P	19	22N	11E	3625
							21B55SP	20	22N	11E	3700
Beehive Springs	20B25SP	10	20N	20E	5310	Skagit River	21A4	35	39N	12E	2200
							21A1	9	39N	12E	3680
							21A28a	26	40N	12E	6000
Stemilt Slide Upper Wheeler	20B26	30	21N	20E	5000	Beaver Creek Trail Beaver Pass Brown Top Devils Park Freezeout Creek Trail Freezeout Meadows (New) Granite Creek Meadows Cabins New Hozomeen Lake Thunder Basin	21A1	9	39N	12E	3680
	20B7SP	30	21N	20E	4400		21A28a	26	40N	12E	6000
							20A4	34	38N	16E	5900
Ahtanum R. S. Big Boulder Creek Bumping Lake Bumping Lake New Bumping Ridge Fish Lake Green Lake Grouse Camp Lake Cle Elum Morse Lake Tunnel Avenue White Pass (East Side)	21C11	24	12N	14E	3100	Skagit River	21A4	35	39N	12E	2200
	21B9SP	35	23N	14E	3200		21A1	9	39N	12E	3680
	21C8P	23	16N	12E	3450		21A28a	26	40N	12E	6000
Stemilt Creek	21C36	13	16N	12E	3400	Beaver Creek Trail Beaver Pass Brown Top Devils Park Freezeout Creek Trail Freezeout Meadows (New) Granite Creek Meadows Cabins New Hozomeen Lake Thunder Basin	20A4	34	38N	16E	5900
	21C38SP	9	15N	12E	4600		20A1	14	40N	14E	3500
	21B45P	28	24N	14E	3371		20A38	8	40N	16E	5000
Yakima River	21C10SP	3	12N	13E	6000	Skagit River	21A4	35	39N	12E	2200
	20B11SP	29	21N	19E	5385		21A1	9	39N	12E	3680
	21B14M	15	20N	14E	2200		21A28a	26	40N	12E	6000
Morse Lake	21C17SP	6	16N	11E	5400	Beaver Creek Trail Beaver Pass Brown Top Devils Park Freezeout Creek Trail Freezeout Meadows (New) Granite Creek Meadows Cabins New Hozomeen Lake Thunder Basin	20A4	34	38N	16E	5900
	21B8P	13	21N	11E	2450		20A1	14	40N	14E	3500
	21C28SP	2	13N	11E	4500		20A38	8	40N	16E	5000

OLYMPIC PENINSULA

Dungeness River	2384	1	28N	5W	5200
Deer Park					
Hurricane	2383	36	29N	7W	4500
Cox Valley	23814	31	29N	6W	4500

LEGEND

- 21A7 Snow Course Only
- 21A7a Aerial Marker Only
- 21A7m Snow Course And Aerial Marker
- 21A7m Soil Moisture Station
- 21A7p Snow Course And Precipitation Storage Gage
- 21A7SP Precipitation Storage Gage
- 21A7SP Snow Pillow



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE						LOWER COLUMBIA DRAINAGE					
Boyer Mountain	17A2	7	31N	43E	5250	Spruce Springs	17C4	9	BN	40E	5700
Bunchgrass Meadow	17A1SP	24	37N	44E	5000	Touchet No. 2	17C5SP	6	7N	40E	5530
Summit G. S.	18A7	20	39N	35E	4600	June Lake	22C09SP	26	BN	5E	3200
Rogged Ridge	17B02	12	27N	45E	3333	Lone Pine Shelter	21C26SP	8	9N	7E	3800
Baird	17A6	19	36N	42E	3215	Plains of Abraham	22C1SP	35	9N	5E	4400
Stranger Mountain	17A3	26	31N	38E	4990	Spencer Meadow	21C20SP	16	BN	7E	3400
Log	18A10	6	29N	38E	3370	Surprise Lakes	21C13SP	14	7N	8E	4250
Okanogan River						Cowlitz River					
Mutton Creek No. 1	19A1	30	37N	24E	5700	Cayuse Pass	21C6	15	16N	10E	5300
Mutton Creek No. 2	19A4	19	37N	24E	6000	Pigtail Peak	21C33SP	11	13N	11E	5900
Salman Meadows	19A2SP	33	37N	24E	4500	Potato Hill	21C14SP	36	10N	10E	4500
Harts Pass	20A5SP	7	37N	18E	6500	Sheep Canyon	22C10SP	12	8N	4E	4050
Chelan Lake Basin						Strawberry	22C08SP	9	10N	6E	3280
Lyman Lake	20A23SP	18	31N	16E	5900	PUGET SOUND DRAINAGE					
Park Creek Ridge	20A12SP	18	34N	16E	4600	Nisqually River					
Rainy Pass	20A9SP	21	35N	17E	4780	Paradise Park (New)	21C35SP	13	15N	8E	5500
Mirror Lake	20A39	30	31N	18E	5600	White River					
Entiat River						Corral Pass	21B13 SP	30	18N	11E	6000
Brief	20B19	34	28N	19E	1600	Green River					
Entiat Meadows	20A33a	28	31N	17E	4540	Airstrip	21B24P	18	20N	11E	1800
Entiat River Trail	20A34a	2	29N	17E	3325	Charley Creek	21B25	27	21N	8E	1200
Fox Camp	20A36a	17	30N	18E	6510	Cougar Mountain	21B42SP	21	21N	9E	3200
Pope Ridge	20B20	22	29N	18E	3540	Grass Mountain No. 2	21B27	14	20N	8E	2900
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540	Grass Mountain No. 3	21B28	12	20N	8E	2100
Pugh Ridge	20A32a	34	30N	18E	6725	Lester Creek	21B29	36	20N	10E	3100
Shady Pass	20A37	20	29N	19E	6200	Lynn Lake	21B50	22	20N	8E	4000
Snow Brushy	20A35a	21	30N	17E	3910	Snowmill Ridge	21B31	5	19N	11E	4700
Tommy Creek	20B21a	10	28N	18E	4900	Stampede Pass	21B10 SP	25	21N	11E	3860
Wenatchee River						Twin Camp	21B30	18	19N	11E	4100
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240	Cedar River					
Blewett Pass No. 2	20B2 SP	35	22N	17E	4270	City Cabin	21B3	10	21N	10E	2390
Stevens Pass	21B15P	14	26N	13E	4070	Mt. Gardner	21B21P	30	22N	10E	3300
Trough #2	20B25SP	10	20N	20E	5310	Snoqualmie River					
Squillchuck Creek						Alpine Meadow	21B48	31	27N	9E	3500
Beehive Springs	20B3	12	21N	19E	4400	Olallie Meadows	21B2P	19	22N	11E	3625
Stemilt Creek						Olallie Meadows East	21B55SP	20	22N	11E	3700
Stemilt Slide	20B6	30	21N	20E	5000	Skagit River					
Upper Wheeler	20B7SP	30	21N	20E	4400	Beaver Creek Trail	21A4	35	39N	12E	2200
Yakima River						Beaver Pass	21A1	9	39N	12E	3680
Ahtanum R. S.	21C11	24	12N	14E	3100	Brown Top	21A28a	26	40N	12E	6000
Big Boulder Creek	21B9SP	35	23N	14E	3200	Devils Fork	20A4	34	38N	16E	5900
Bumping Lake	21C8P	23	16N	12E	3450	Freezeout Creek Trail	20A1	14	40N	14E	3500
Bumping Lake New	21C36	13	16N	12E	3400	Freezeout Meadows (New)	20A3B	8	40N	16E	5000
Bumping Ridge	21C38SP	9	15N	12E	4600	Granite Creek	20A06	25	36N	16E	3500
Fish Lake	21B4SP	28	24N	14E	3371	Meadows Cabins	20A8	29	36N	14E	1900
Green Lake	21C10SP	3	12N	13E	6000	New Hozomeen Lake	21A30	19	40N	14E	2800
Grouse Camp	20B11 SP	29	21N	19E	5385	Thunder Basin	20A07	10	35N	14E	4200
Lake Cle Elum	21B14M	15	20N	14E	2200						
Morse Lake	21C17SP	6	16N	11E	5400						
Tunnel Avenue	21B8P	13	21N	11E	2450						
White Pass (East Side)	21C28SP	2	13N	11E	4500						

LEGEND

- 21A7 Snow Course Only
- 21A7a Aerial Marker Only
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- 21A7SP Precipitation Storage Gage
- 21A7SP Snow Pillow

OLYMPIC PENINSULA

Deer Park	Dungeness River	23B4	1	28N	5W	5200
Hurricane	Elwha River	23B3	36	29N	7W	4500

WATER SUPPLY OUTLOOK FOR WASHINGTON

and

FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS

ISSUED BY

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WATER SUPPLY OUTLOOK

State of Washington

March 1, 1984

The water supply forecast for most of Washington deteriorated during February. Water users in the Olympic's and the Puget Sound areas can expect below normal runoff this spring and summer. The mountain snowpack ranges well below average to average. It is below average in the Spokane, Pend Oreille, Yakima, Wenatchee, Entiat and Methow Rivers. The West Cascade slopes show well below average snowpack, with the Skagit having less than 70% of normal. Fall and winter precipitation was above normal in all sections of the state. Reservoir storage is very good for March 1.

SNOW COVER

Puget Sound Watersheds are well below normal. They range from a low of 66% on the Skagit, up from 45% in February, to 85% on the White River. Olympic Peninsula streams are also below average with the Elwha and the Dungeness having a snowpack at 63% of normal. The other areas of the state with much below average snowpack are the Spokane and Pend Oreille River drainages which have 71% and 76% of normal.

The Kettle and Methow Rivers are near average. All other streams in the state are between 80 and 90% of average.

PRECIPITATION

Precipitation during the November-February winter period has been above average over the entire state except the Southwest Cascade area. During this period the Puget Sound area received 49.86 inches, 105% of normal. The Yakima-Wenatchee area received 8.78 inches, 111% of normal. Precipitation in the north eastern area was 120% of normal.

RESERVOIR STORAGE

Stored water supplies are very good for March 1, with all sections of the state reporting above average storage. The Yakima irrigation reservoirs are storing 827,100 acre feet of water compared to the March 1 average of 592,600, or 139% of normal. The reservoirs in the Okanogan Irrigation District are at capacity. Lake Chelan is at 340,800 acre-feet, 145% of normal and Banks Reservoir is at 902,600 acre-feet, 145% of normal.

STREAMFLOW

River flows during February were above average for most of the state. Streams which had above average runoff for February included the Kettle River at 196%, the Okanogan River at 159% and the Chelan River at 140%.

Spring and summer streamflow are forecast to be within 20% of average. The Puget Sound rivers are still forecast below average, with the Skagit at 75%, the Cedar at 75% and the Dungeness at 71%. The East Side Cascade streams are also forecast to be within 20% of normal, with the Yakima at 83%, the Wenatchee at 92%, the Methow at 89% and the Okanogan at 79%.

STREAMFLOW FORECASTS - MARCH 1984

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts. These forecasts are made as a product of the cooperative efforts of the Soil Conservation Service and the National Weather Service. Streamflow figures for 1982 and 1983 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousnads of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
<u>COLUMBIA BASIN</u>							
<u>COLUMBIA RIVER SYSTEM</u>	<u>1/</u>						
Columbia River	41500	93	Apr-Sept	43225	48575	48531	44605
at Birchbank	33200	93	Apr-July	34569	38210	38501	35705
	24200	93	Apr-June	24281	27454	27002	26027
Columbia River	58900	88	Apr-Sept	46662	56425	70303	66841
at Grand Coulee	48400	88	Apr-July	34933	43821	58525	56169
	38800	88	Apr-June	26597	32610	44235	44036
Columbia River bl.	65000	89	Apr-Sept	44560	79386	77308	72781
Rock Island Dam	54800	89	Apr-July	58672	66629	64689	61601
	43000	89	Apr-June	69844	50985	49348	48384
Columbia River at	88300	88	Apr-Sept	103682	118503	96188	100800
The Dalles, OR	75800	88	Apr-July	88273	101631	81125	86080
	61500	88	Apr-June	70038	80122	63521	69881
<u>PEND OREILLE RIVER SYSTEM</u>							
Pend Oreille River	10900	71	Apr-Sept	12841	17721	13896	15425
bl. Box Canyon	10000	71	Apr-July	11482	16324	13179	14156
	8700	71	Apr-June	9226	13306	11594	12227
<u>KETTLE RIVER SYSTEM</u>							
Kettle River	1790	98	Apr-Sept	2709	2330	2184	1829
nr. Laurier	1700	98	Apr-July	2534	2174	2013	1738
	1550	98	Apr-June	2251	1747	1657	1581
Colville River	130	97	Apr-Sept	182	160	125	134
at Kettle Falls	120	98	Apr-July	161	146	111	123
	112	98	Apr-June	144	132	95	114

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
<u>SPOKANE RIVER SYSTEM</u>							
Spokane River <u>2/</u> at Post Falls, ID	2040	72	Apr-Sept	M	M	2238	2848
	1960	71	Apr-July	M	M	2145	2754
<u>OKANOGAN RIVER SYSTEM</u>							
Similkameen River nr. Nighthawk	1120	77	Apr-Sept	1490	1638	1241	1462
	1050	77	Apr-July	1356	1491	1118	1365
	895	77	Apr-June	1155	1166	930	1161
Okanogan River nr. Tonasket	1300	79	Apr-Sept	2170	2046	1631	1644
	1180	79	Apr-July	1891	1712	1416	1497
	1000	79	Apr-June	1569	1306	1107	1262
<u>METHOW RIVER SYSTEM</u>							
Methow River nr. Pateros	874	89	Apr-Sept	1354	1203	786	980
	808	89	Apr-July	1243	1120	724	908
	688	89	Apr-June	1094	918	602	773
<u>CHELAN RIVER SYSTEM</u>							
Chelan River at Chelan <u>3/</u>	1100	91	Apr-Sept	1261	1376	916	1203
	965	91	Apr-July	1104	1223	798	1055
	755	91	Apr-June	901	958	621	826
Stehekin River at Stehekin	800	93	Apr-Sept	M	938	662	860
	676	93	Apr-July	727	800	543	727
	514	93	Apr-June	572	603	403	553
Entiat River nr. Ardenvoir	200	85	Apr-Sept	292	282	186	235
	180	85	Apr-July	263	258	168	213
	145	85	Apr-June	221	206	137	172
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River nr. Plain	1120	88	Apr-Sept	M	M	M	1270
	1000	88	Apr-July	M	M	M	1136
	793	88	Apr-June	M	M	M	899
Wenatchee River at Peshastin	1570	92	Apr-Sept	1590	2013	1188	1712
	1420	92	Apr-July	1432	1791	1075	1545
	1140	92	Apr-June	1191	1429	869	1237
Stemilt Basin nr. Wenatchee	115*	83	May-Sept	M	M	M	**138
Icicle Creek nr. Leavenworth	300	81	Apr-Sept	M	M	M	**370
	275	81	Apr-July	M	M	M	**340
	220	81	Apr-June	M	M	M	**270

* Thousands of Miners' Inches.

** Average computed for 1963-1977.

2/ Forecasts made by Jerry Beard, Soil Conservation Service, Boise, Idaho.
Observed flow corrected for storage in Coeur d'Alene Lake.

3/ Observed flow corrected for storage in Lake Chelan.

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-	20-Yr.			
		20-Yr. Avg.	cast period	1983	1982	1981	20-Yr. Average 61-80-
<u>YAKIMA RIVER SYSTEM</u>							
Yakima River nr. Martin <u>4/</u>	116	83	Apr-Sept	109	152	95	139
	107	83	Apr-July	96	138	82	128
	93	83	Apr-June	81	121	73	111
Yakima River at Cle Elum <u>5/</u>	760	81	Apr-Sept	733	1100	700	943
	688	81	Apr-July	659	1010	643	854
	592	81	Apr-June	589	883	563	734
Yakima River nr. Parker <u>6/</u>	1750	83	Apr-Sept	2221	2434	1194	2096
	1585	83	Apr-July	1958	2193	1059	1898
	1390	83	Apr-June	1722	1909	961	1667
Kachess River nr. Easton <u>7/</u>	98	81	Apr-Sept	105	134	81	121
	93	81	Apr-July	96	126	72	115
	82	81	Apr-June	84	110	66	101
Cle Elum River nr. Roslyn <u>8/</u>	400	86	Apr-Sept	421	516	313	463
	365	86	Apr-July	381	468	282	422
	305	86	Apr-June	324	392	244	353
Bumping River <u>9/</u> nr. Nile	124	87	Apr-Sept	137	161	78	142
	113	87	Apr-July	128	147	70	129
	93	87	Apr-June	109	123	63	107
American River nr. Nile	103	83	Apr-Sept	M	140	63	124
	94	83	Apr-July	M	130	58	113
	78	83	Apr-June	M	109	51	94
Tieton River <u>10/</u> at Tieton Dam	220	89	Apr-Sept	M	M	148	246
	185	89	Apr-July	M	M	131	207
	148	89	Apr-June	M	M	108	165
Naches River <u>11/</u> nr. Naches	720	83	Apr-Sept	966	998	419	867
	650	83	Apr-July	881	945	380	784
	554	83	Apr-June	770	775	339	667
Ahtanum Creek <u>12/</u> Nr. Tampico	41	87	Apr-Sept	M	M	M	47
	38	87	Apr-July	M	M	M	43
	32	87	Apr-June	M	M	M	37

4/ Observed flow corrected for storage in Lake Keechelus.

5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Rosa, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.

7/ Observed flow corrected for storage in Lake Kachess.

8/ Observed flow corrected for storage in Lake Cle Elum.

9/ Observed flow corrected for storage in Bumping Lake.

10/ Observed flow corrected for storage in Rimrock Lake.

11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.

12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
<u>LOWER COLUMBIA RIVER SYSTEM</u>							
Mill Creek	15.8	90	Apr-Sept	13.48	24.62	28.5	**17.50
at Walla Walla	15.7	90	Apr-July	13.39	24.48	28.5	**17.33
	15.5	90	Apr-June	13.36	21.63	27.3	**17.15
Lewis River	1100	88	Apr-Sept	1255	1170	1096	1249
at Ariel <u>13/</u>	955	88	Apr-July	1046	1030	971	1086
	846	88	Apr-June	821	927	865	961
Cowlitz River <u>14/</u>	1770	87	Apr-Sept	1935	4936	M	2038
bl. Mayfield Dam	1547	91	Apr-July	1754	1963	M	1778
	1300	91	Apr-June	1424	1722	M	1502
Cowlitz River <u>14/</u>	2180	82	Apr-Sept	2618	2655	2390	2673
at Castle Rock	1900	82	Apr-July	2195	2363	2125	2323
	1620	82	Apr-June	1739	2080	1875	1980
<u>OLYMPIC PENINSULA</u>							
<u>DUNGENESS RIVER SYSTEM</u>							
Dungeness River	114	71	Apr-Sept	197	196	109	160
nr. Sequim	93	71	Apr-July	158	163	88	130
	69	71	Apr-June	117	117	70	97
<u>ELWHA RIVER SYSTEM</u>							
Elwha River	420	76	Apr-Sept	538	607	380	**553
nr. Port Angeles	345	76	Apr-July	448	512	316	**454
<u>PUGET SOUND</u>							
<u>SKAGIT RIVER SYSTEM</u>							
Skagit River	1900	75	Feb-Aug	1995	2248	2119	**2532
at Newhalem <u>15/</u>	1770	75	Apr-Sept	1531	1880	1773	**2356
	1480	75	Apr-July	1061	1439	1431	**1972
	1115	75	Apr-June	698	1004	1064	**1485
<u>GREEN RIVER SYSTEM</u>							
Green River bl.	240	76	Apr-Sept	190	227	268	**316
Howard Hanson Dam <u>16/</u>	215	76	Apr-July	145	195	245	**284
	195	76	Apr-June	107	174	219	**256
<u>CEDAR RIVER SYSTEM</u>							
Cedar River	70	75	Apr-Sept	66	80	74	**93
nr Cedar Falls							
<u>13/</u>	Observed flow corrected for storage in Lake Merwin, Yale and Swift Res.						
<u>14/</u>	Observed flow corrected for storage in Riffe Lake and Mayfield Reservoir.						
<u>15/</u>	Observed flow corrected for storage in Diablo, Ross and Gorge Reservoirs.						
<u>16/</u>	Observed flow corrected for storage in Howard Hanson Dam.						

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about March 1, 1984 as percent of the same date in 1983 and 1982 and average of record.

Tributary Basin	No. of	1984 Snow Water Expressed		
	Courses	as percent of		
	Average	1983	1982	1961-80 Avg.
<u>UPPER COLUMBIA BASIN</u>				
Pend Oreille	7	75	86	76
Ketttle	11	86	82	96
Colville	3	123	76	86
Spokane	6	73	77	71
Okanogan	14	79	76	79
Methow	4	76	74	86
Chelan	3	76	102	83
Entiat	9	104	113	108
Wenatchee	8	77	93	75
Yakima	13	77	80	80
Antanum	2	63	62	89
<u>LOWER COLUMBIA BASIN</u>				
Mill Creek	0	116	70	96
Cowlitz	1	73	90	85
<u>PUGET SOUND</u>				
White	1	73	91	85
Green	9	133	124	66
Snoqualmie	2	100	116	70
Skykomish	2	78	86	66
Skagit	12	69	83	67
Baker	8	70	-	66
<u>OLYMPIC PENINSULA</u>				
Morse	1	67	82	79
Elwha	1	74	66	63
Dungeness	1	54	65	63

RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE 1/ CAPACITY	1984	Measured (March)		
				1983	1982	Normal*
		<u>COLUMBIA</u>				
Spokane	Coeur d'Alene Lake	225.1	106.5	222.2	433.7	121.6
Columbia	Franklin D. Rossevelt Lake	5232.0	4497.6	4470.7	4049.4	2681.2
Columbia	Banks Lake	714.9	902.6	712.2	706.9	621.3
Okanogan	Conconully Reservoir	13.0	12.4	12.4..	10.2	6.7
Okanogan	Conconully Lake	10.5	10.4	10.4	8.9	7.5
Chelan	Lake Chelan	676.1	340.8	233.3	269.4	235.5
		<u>YAKIMA</u>				
Yakima	Keechelus Lake	157.8	133.5	100.3	121.8	105.4
Kachess	Kachess Lake	239.0	202.1	207.2	182.1	183.0
Cle Elum	Lake Cle Elum	436.9	322.0	309.6	118.7	280.2
Bumping	Bumping Lake	33.7	13.7	6.8	16.5	8.7
Tieton	Rimrock Lake	198.0	150.8	135.0	153.6	125.3
		<u>PUGET SOUND</u>				
Skagit	Ross Reservoir	1404.1	1062.2	856.2	799.4	894.0
Skagit	Diablo Reservoir	90.6	38.1	89.0	84.3	85.2
Skagit	Gorge Reservoir	9.8	7.8	8.4	7.6	8.1

^{1/} Based on Active Storage
 * 15-yr. Average 1963-1977

PRECIPITATION 1/

Division Average Observations and Departures

Drainage Divisions	Fall		Winter	
	Sept-Oct Observed	1983 <u>2/</u> Departures	Nov. 1983 - Observed	Feb. 1984 <u>2/</u> Departures
Northeastern Wash	1.55	-1.55	9.81	+1.70
Southeastern Wash	2.54	-0.06	9.41	+0.68
East slope Cascade	3.76	-0.99	8.78	+0.89
North Central Wash	1.45	-0.14	6.19	+0.41
Northwest Cascade	7.97	-5.24	49.86	+2.76
Southwest Cascade	5.36	-3.32	34.76	-0.72

Northwestern Washington	- Lower Spokane, Colville, Sanpoil, and Lower Kettle Drainages.
Southeastern Washington	- Touchet, Tucannon, and Palouse Drainages
East Slope Cascades	- Yakima, Wenatchee, and Chelan Drainages
North Central Washington	- Methow and Okanogan Drainages
Northwest Slope Cascades	- Puget Sound Drainages
Southwest Slope Cascades	- Lower Columbia Drainages

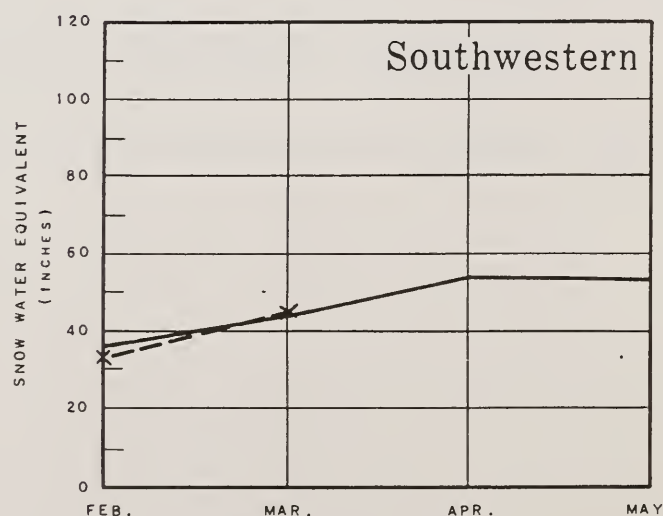
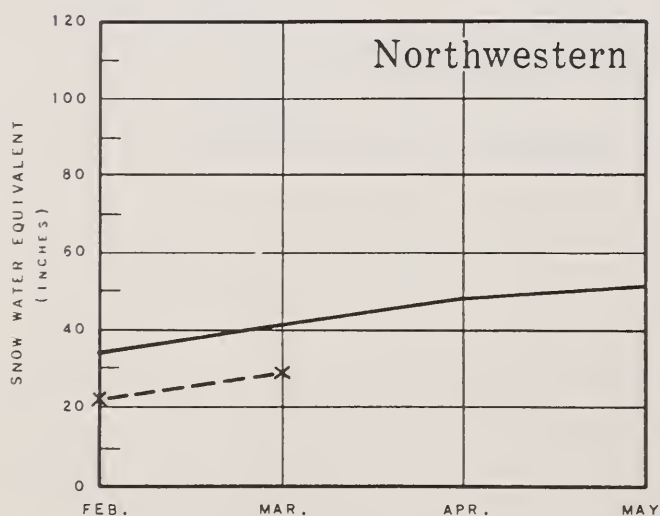
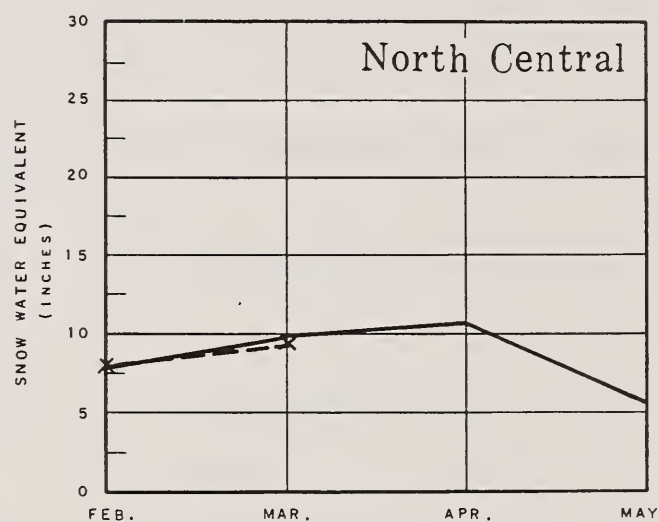
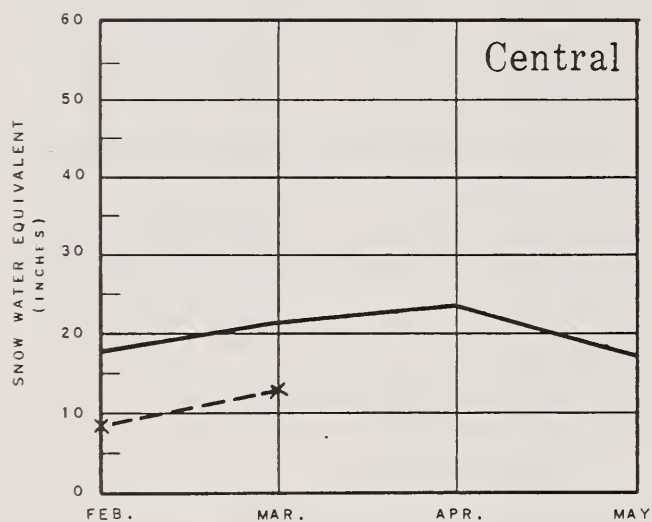
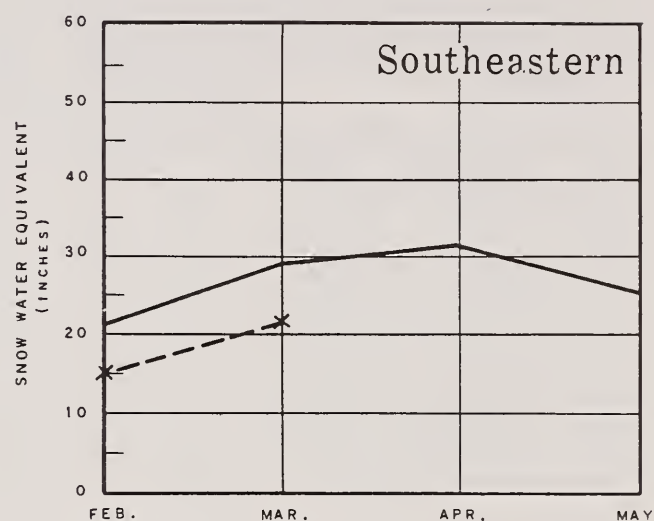
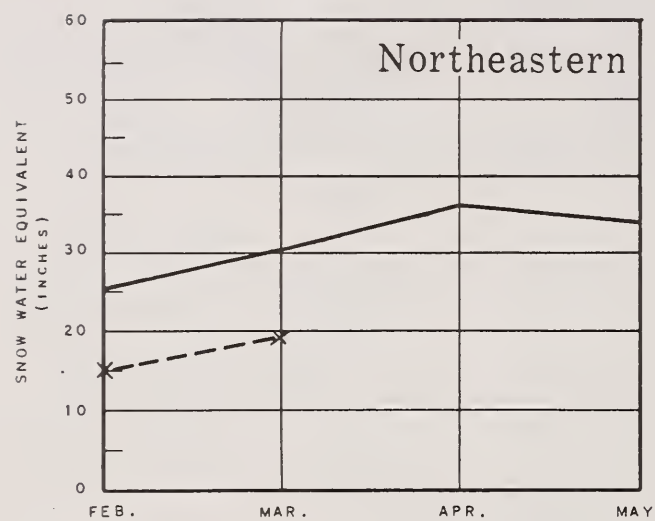
1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service

2/ - Departure from 15-year (1958-1972) drainage division average

WASHINGTON SNOW COVER

1984

DRAINAGE AREAS



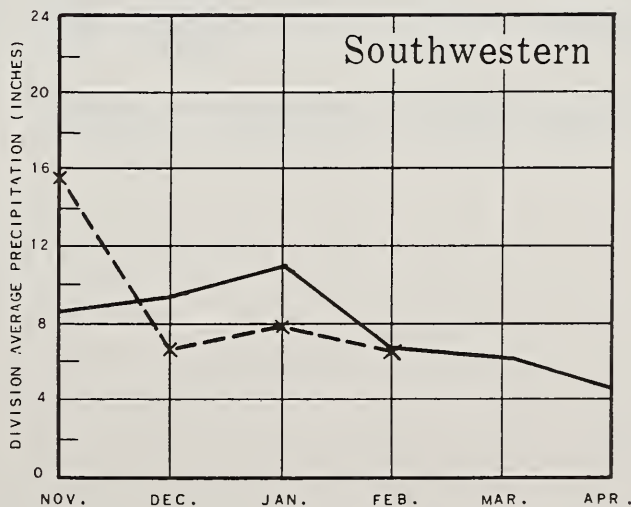
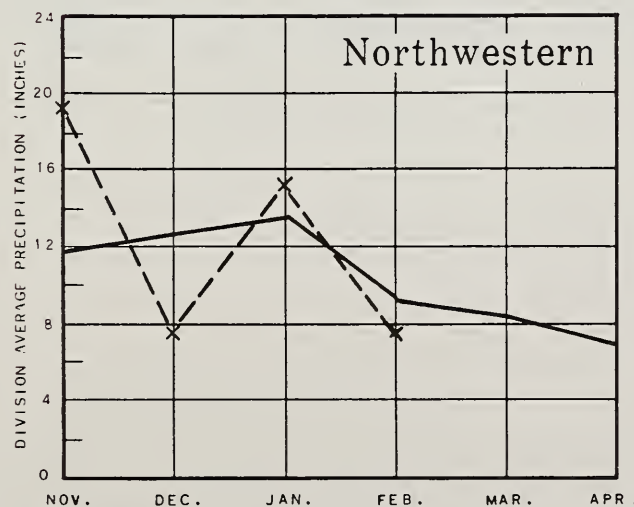
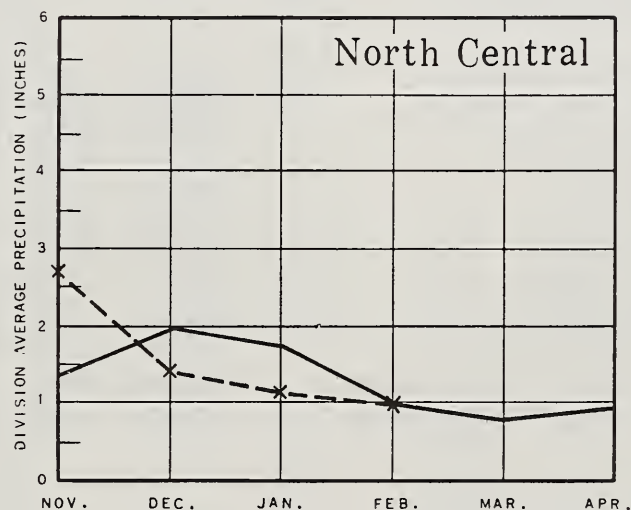
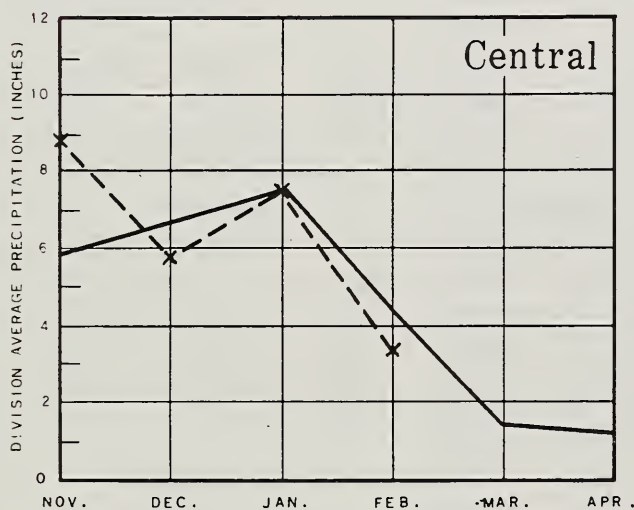
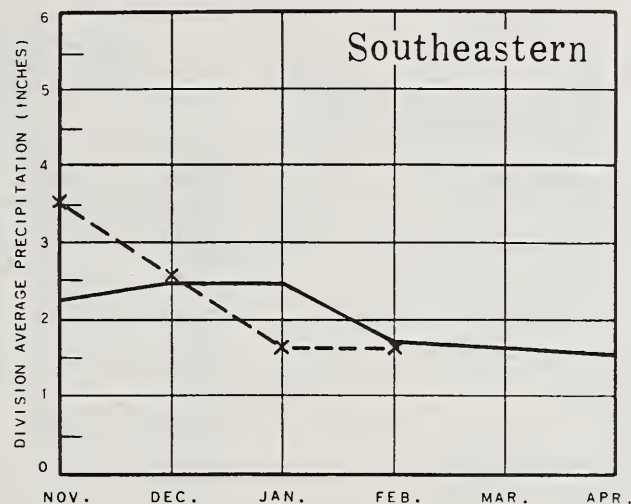
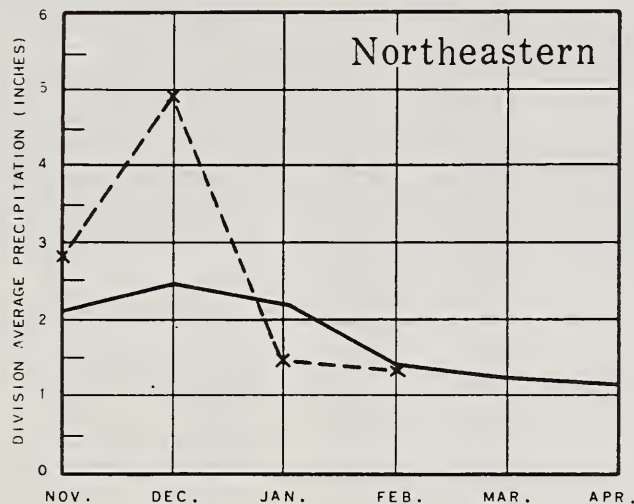
Average —
1984 - - -

Selected Snow Survey Courses by Soil Conservation Service

WASHINGTON VALLEY PRECIPITATION

1984

DRAINAGE AREAS



Average —
1984 - - -

Preliminary Analysis by National Weather Service

SNOW DATA TO MARCH 1, 1984 - APPENDIX 1

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

UPPER COLUMBIA DRAINAGEPEND OREILLE RIVER

Benton Meadow	16A02	2344	3/02	17	5.0	2.5	6.3
Benton Spring	16A03	4900	3/02	48	18.5	19.3	17.3
Chewelah	17A04	4925	2/26	50	13.4		17.2
Heart Lake Trail	14C10	4800	2/29	40	13.2	15.4	20.3
Hoodoo Basin	15C10	6000	2/29	89	33.2	40.4	44.6
Hoodoo Creek	15C01	5900	2/29	79	30.0	36.6	41.8
Lookout	15B02	5250	2/28	62	19.2	29.0	30.4
Nelson	2D04CA	3050	3/01	38	10.2	16.1	14.4
Schweitzer Bowl	16A06	4500	3/01	60	19.5	34.5	27.4
Schweitzer Ridge	16A05	6100	3/01	90	34.6	49.0	40.2

KETTLE RIVER

Barnes Creek	2B06CA	5300	3/01	53	16.0	15.7	17.5
Big White Mtn.	2E03CA	5500	2/25	56	15.4	20.4	17.2
Butte Creek	18A03	4070	2/26	38	10.6	11.3	8.6
Carmi	2E02CA	4100	2/28	25	5.5	7.7	6.2
Farron #1	2B02CA	4000	Not Measured			13.6	9.4
Farron #2	2.b02aC	4000	2/29	43	12.2	15.2	11.6
Goat Creek	18A04	3595	2/26	30	8.1		6.6
Moashee Pass	2E01CA	4500	2/29	40	10.7	11.7	12.5
Summit G.S.	18A05	2150	2/26	34	9.5	8.1	7.3
Trapping Creek Lower	2E05CA	3050	2/27	22	5.0	5.7	6.6
Trapping Creek Upper	2E04CA	4450	2/25	34	7.2	10.4	9.3

COLVILLE RIVER

Baird	17A06	3215	2/26	36	9.0	7.3	7.0
Chewelah	17A04	4925	2/26	50	13.4		17.2
Togo	18A10	3370	2/27	25	7.5		10.2

Average based on 1961-1980 averages.

SNOW DATA TO MARCH 1, 1984 - APPENDIX 2

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

SPOKANE RIVER

Above Burke	15B08	4100	2/28	40	12.0	15.4	19.8
4th of July Summit	16B03	3100	2/24	31	8.6	5.4	8.9
Lookout	15B02	5250	2/28	62	19.2	29.0	30.4
Mosquito Ridge	16A04	5110	2/27	68	22.4	40.4	34.1
Sherwin	16C01	3200	3/01	38	11.8	8.4	13.0
Sunset	15B09A	5600	2/27	82	24.6	35.5	33.1

NEWMAN LAKE

Ragged Ridge	17B02	3333	3/1	15	2.8	2.8	New
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OKANOGAN RIVER

Aberdeen Lake	1F01CA	4300	2/29	22	5.2	7.6	6.0
Blackwall Peak	2G03CA	6250	2/28	65	20.7	28.0	31.1
Brenda Mine	2F18CA	4800	2/28	40	10.9	13.0	12.6
Brookmere	1C01CA	3200	2/29	16	4.9	6.7	8.9
Enderby	1F04CA	6250	2/27	96	33.5	37.1	32.1
Esperon Creek Lower	2F15CA	4400	Not Measured				7.8
Esperon Creek Middle	2F15CA	4700	"	"			10.2
Esperon Creek Upper	2F13CA	5400	"	"			10.6
Grayback Reservoir	2F08CA	5225	2/29	32	7.8	8.9	8.0
Hamilton Hill	2G06CA	4900	2/26	29	7.1	10.8	14.4
Harts Pass	20A05A	6500	2/28	90	29.1	39.3	38.8
Isintok Lake	2F11CA	6300	2/25	19	3.9	5.6	7.6
Lost Horse Mountain	2G04CA	7000	Not Measured			8.0	8.5
McCulloch	2F03CA	4200	2/27	24	5.2	6.5	6.4
Missezula Mtn.	2G05CA	5100	2/28	22	4.7	7.7	9.1
Mission Creek	2F05CA	6000	3/02	55	16.5	18.8	17.3
Monashee Pass	2E01CA	4500	2/29	40	10.7	11.7	12.5
Mount Kobau	2F12CA	5960	2/26	40	10.9	13.0	12.6

Average based on 1961-1980 averages.

SNOW DATA TO MARCH 1, 1984 - APPENDIX 3

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

OKANOGAN RIVER (CONT.)

Mutton Creek No. 1	19A01	5700	2/27	37	12.0	16.1	11.8
Mutton Creek No.2 SP	19A11	6000					New
Nickel Plate	2G02CAN	6200	2/25	8	2.4	3.1	5.8
Oyama Lake	2F19CAN	4400	2/28	24	5.2	8.0	6.6
Postill Lake	2F07CAN	4500	2/29	29	6.3	8.3	7.5
Rusty Creek	19A03	4000	2/27	26	7.0	7.4	6.6
Salmon Meadows	19A02	4500	2/27	37	9.3	13.2	9.3
Silver Star Mountain	2F10CAN	6050	2/26	68	21.7	29.1	24.1
Summerland Reservoir	2F02CAN	4200	2/25	32	7.1	9.1	9.0
Sunday Summit	2G01CAN	4300	2/27	8	2.4	3.1	5.8
Trout Creek	2F01CAN	4700	2/29	15	4.0	6.5	6.6
Vaseux Creek	2F20CAN	4600	2/28	24	8.3	7.5	6.2
White Rocks Mountain	2F09CAN	6000	2/29	53	20.7	23.3	19.6

METHOW RIVER

Harts pass	20A05A	6500	2/28	90	29.1	39.3	38.8
Mutton Creek NO. 1	19A01	5700	2/27	37	12.0	16.1	11.8
Mutton Creek No. 2 SP	19A11	6000	Not Measured				New
Rusty Creek	19A03	4000	2/27	66	7.0	7.4	6.6
Salmon Meadows	19A02	4500	2/27	37	9.3	13.2	9.3

CHELAN LAKE BASIN

Cloudy Pass +	20A22	6500	Not Measured				35.2
Lyman Lake	20A23	5900	3/01	143	46.2	59.0	47.5
Little Meadows +	20A24a	5275	3/01	100	29.0	37.6	37.6
Mirror Lake	30A39	5600	3/01	80	24.8	33.0	New
Park Creek Ridge	20A12	4600	3/01	102	33.8	45.5	43.1
Rainy Pass	20A09	4780	2/28	79	14.6	33.0	35.7

Average based on 1961-1980 averages.

+ Aerial stadia observation.

SNOW DATA TO MARCH 1, 1984 - APPENDIX 4

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

ENTIAT RIVER

Brief	20B19	1600	2/28	19	5.8	7.0	7.6
Entiat Meadows +	20A33	4540	2/27	96	32.6	44.7	57.7
Entiat River Trail +	20A34	3325	2/27	45	14.4	23.1	22.1
Fox Camp +	20A36	6510	2/27	114	41.0	62.5	52.3
Pope Ridge	20B20	3450	2/27	54	15.8	19.3	18.2
Pugh Ridge +	20A32	6725	2/27	71	23.4	38.0	32.9
Shady Pass	20A37	6200	2/27	65	21.4	28.2	24.1
Snow Brushy +	20A35	3910	2/27	93	29.8	37.7	35.3
Tommy Creek +	20B21	4900	2/27	47	13.6	27.0	25.7

WENATCHEE RIVER

Berne Mill Creek	21B23	3170	2/27	58	18.2	23.7	25.5
Berne Mill Creek SP	21B41	3240	2/27	46	13.8	22.1	23.9
Blewett Pass No. 2	20B02	4270	2/23	36	11.7	15.5	14.9
Chiwaukum G. S.	20B16	1810	2/27	30	8.9	11.5	13.0
Lake Wenatchee	20B05	1970	Watershed Logged Discontinued				
Lyman Lake	20A23	5900	3/01	143	46.2	59.0	47.5
Merrett	20B18	2140	2/27	20	6.4	12.0	15.8
Stevens Pass	21B01	4070	2/27	96	29.8	38.8	46.7
Stevens Pass Sand Shed	21B45	3700	2/27	72	23.1	28.6	34.0

COLOCKUM CREEK

Trough #2	20B25	5310	2/27	18	4.1	17.0	9.5
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+ Aerial stadia observation

Average based on 1961-1980 averages.

SNOW DATA TO MARCH 1 , 1984 - APPENDIX 5

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

SQUILCHUCK CREEK

Beehive Springs	20B03	4400	2/27	18	6.1	9.5	8.3
Scout-a-Vista	20B04	3400	Not Measured			9.3	8.2

STEMILT CREEK

Stimelt Slide	20B06	5000	Not Measured			16.0	13.4
Upper Wheeler	20B07	4400	2/27	35	11.0	14.5	9.9

YAKIMA RIVER

Ahtanum R.S.	21C11	3100	2/25	22	7.2	10.5	6.9
Big Boulder Creek	21B09	3200	2/24	53	13.0	17.8	18.5
Blewet Pass No. 2	20B02	4270	2/23	36	11.7	15.5	14.9
Bumping Lake Old	21C08	3450	2/14	33	11.0		
			2/28	28	11.4	17.9	18.5
Bumping Lake New	21C36	3400	2/14	33	9.0	15.8	18.5
			2/28	46	13.7	19.5	19.5
Cayuse Pass	21C06	5300	2/27	158	58.9	81.0	69.1
Colockum Pass	20B09	5370	2/22	48	16.7	21.7	14.2
Corral Pass	21B13	6000	3/01		5.6s	28.6	34.0
Fish Lake	21B04	3371	2/24	76	25.0	31.0	29.8
Green Lake	21C10	6000	2/25	68	25.6	41.3	29.8
Grouse Camp	20B11	5385	2/28	53	16.4	26.0	15.9
Lake Cle Elum	21B14	2200	2/29	9	3.4	5.6	8.4
Olallie Meadows	21B02	3625	2/27	64	25.9	24.1	41.5
Stampede Pass	21B10	3860	2/03	61	25.8	28.2	31.5
Tunnel Avenue	21B08	2450	2/15	38	11.0	15.4	21.4
			2/29	37	12.8	15.4	20.9
White Pass E. Side	21C28	4500	2/13	46	15.0	24.2	21.0
			3/03	65	20.5	20.4	23.1

Average based on 1961-1980 Averages.

s Snow pillow reading.

SNOW DATA TO MARCH 1, 1984 - APPENDIX 6

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	2/25	22	7.2	10.5	6.9
Green Lake	21C10	6000	2/25	68	25.6	41.3	29.8

LOWER COLUMBIA DRAINAGEMILL CREEK

High Ridge	18D19	4150	2/28	85	28.5	24.5	29.4
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COWLITZ RIVER

Cayuse Pass	21C06	5300	2/27	158	58.9	81.0	69.1
White Pass E. Side	21C28	4500	3/03	65	20.5	24.5	23.1

PUGET SOUND DRAINAGEWHITE RIVER

Cayuse Pass	21C06	5300	2/27	158	58.9	81.0	69.1
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GREEN RIVER

Airstrip	21B24	1800	3/02	0		0.0	5.1
Charley Creek	21B25	1200	3/02	0		0.0	1.0
Grass Mtn. No. 2	21B27	2900	3/02	19	5.3	3.0	16.9
Grass Mtn. No. 3	21B28	2100	3/02	0		0.0	4.8
Lester Creek	21B29	3100	3/02	42	13.2	12.6	20.6
Lynn Lake	21B50	4000	3/02	41	11.5	5.8	15.6
Sawmill Ridge	21B31	4700	3/02	67	20.8	2.3	31.8
Stampede Pass	21B10	3860	3/01	96	38.0	34.8	36.2
Twin Camp	21C30	4100	3/02	53	16.3	18.2	21.9

Average based on 1961-1980 averages

SNOW DATA TO MARCH 1, 1984 - APPENDIX 7

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

SNOQUALMIE RIVER

Olallie Meadows	21B02	3625	2/27	64	25.9	24.1	41.5
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SKYKOMISH RIVER

Stevens Pass	21B01	4070	2/27	96	29.8	38.8	46.7
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Stevens Pass Sand Shed	21B45	3700	2/27	72	23.1	28.6	34.0
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SKAGIT RIVER

Beaver Creek Trail	21A04	2200	2/28	19	6.0	10.9	13.5
Beaver Pass	21A01	3680	2/28	54	16.8	28.9	26.6
Brown Top Ridge	21A28	6000	2/28	129	44.4	50.6	56.1
Devils Park	20A04	5900	2/27	64	14.8	36.8	39.6
Freezeout Creek Trail	20A01	3500	2/27	22	6.6	12.0	11.8
Freezeout Meadows New	20A38	5000	2/27	60	17.4	35.7	36.3
Granite Creek	21A29	3500	2/28	37	10.2	17.0	19.2
Harts Pass	20A05A	6500	2/28	90	29.1	39.3	38.8
Klesilkwa	3d03ACA	3700	2/29	13	3.9	8.4	12.4
Lightning Lake	3D02CAN	4000	2/27	27	7.1	10.1	9.9
Lyman Lake	20A23	5900	3/01	143	46.2	59.0	47.5
Meadow Cabins	20A08	1900	2/27	5	1.7	1.2	7.0
New Hozomeen Lake	21A30	2800	2/27	15	4.5	10.0	12.8
Rainy Pass	20A09	4780	2/28	79	24.6	33.0	35.7
Thunder Basin	20A07	4200	2/27	34	9.0	18.2	19.9

Average based on 1961-1980 averages

SNOW DATA TO MARCH 1, 1984 - APPENDIX 8

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

BAKER RIVER

Dock Butte +	20A11A	3800	3/01	128	51.0		59.9
Easy Pass +	21A07A	5200	3/01	134	54		79.5
Jasper Pass +	21A06A	5400	3/01	170	68		78.8
Martin Lake	21A09A	3600	3/01	140	56.0		67.1
Mt. Blum +	21A18A	5800	3/01	124	50.0		58.6
Rocky Creek	21A12A	2100	3/01	34	14.0		26.8
Schreibers Meadow	21A10A	3400	3/01	84	34.0		51.9
S.F. Thunder Creek +	21A14A	2200	3/01	4	2.0		9.4
Watson Lake	21A08A	4500	3/01	112	45.0		55.9

OLYMPIC PENINSULA DRAINAGEDUNGENESS RIVER

Deer Park	23B04	5200	2/28	29	11.0	22.1	17.4
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MORSE CREEK

Cox Valley	23B14	4500	2/27	68	26.8	40.2	33.9
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ELWHA RIVER

Hurricane	23B03	4500	2/26	36	12.0	16.3	18.9
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+ Aerial stadia observation

Average based on 1961-1980 average

SNOTEL READINGS, MARCH 1, 1984 - APPENDIX 1

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

PEND OREILLE RIVER

Bunchgrass Meadow	17A01	5000	2/15		17.7	27.8
			3/01		21.0	32.2

OKANOGAN & METHOW RIVERS

Harts Pass	20A05	6500	2/15		25.5	33.3
	GT		3/01	84	26.2	39.3
			3/01		28.7	38.8
Salmon Meadow	19A02	4500	2/16		15.0	
			3/01		17.0	28.0

CHELAN LAKE BASIN

Lyman Lake	20A23	5900	2/15		47.2	44.4
	GT		3/01	118	(38.8)	
			3/01		52.5	54.2
Mirror Lake	20A39	5600	2/20		23.0	
	GT		3/01	64	(21.0)	
			3/01		24.7	
Park Creek Ridge	20A12	4600	2/14		27.5	36.0
			2/29		(31.3)	41.2
			3/01		27.1	31.4
Rainy Pass	20A09	4780	2/15			32.5
	GT		2/28	81	(24.6)	33.0
			2/28		27.1	39.3

ENTIAT RIVER

Pope Ridge	20B20	3450	2/15		14.8	16.5
	GT		2/27	57	(16.0)	18.4
			3/01		16.3	18.7

WENATCHEE RIVER

Blewett Pass	20B02	4270	2/15		15.6	17.2
	GT					12.0
			3/01		17.4	19.4
Lyman Lake	20A23	5900	2/15		47.2	44.4
			3/01		52.5	54.2
Stevens Pass	21B01	4070	2/15		28.1	20.7
			3/01		31.7	22.7
Trough # 2	20B25	5300	2/15		2.3	16.5
	GT		2/27	18	(4.1)	17.0
			3/02		3.5	21.1

GT = Ground Truth measurement at SNOTEL site

SNOTEL READINGS, MARCH 1, 1984 - APPENDIX 2

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

COLOCKUM CREEK

Trough # 2	20B25	5300	2/15		2.3	16.5
	GT		2/28	6	(1.8)	13.3
			3/02		3.5	21.1

STEMILT CREEK

Upper Wheeler	20B07	4400	2/15		10.2	25.1
	GT		2/28	30	(9.0)	
			3/01		12.4	29.1

YAKIMA RIVER

Big Boulder Creek	21B09	3200	2/15		13.7	28.8
		GT	2/24	53	13.0	19.2
			3/01		15.3	19.2
Bumping Ridge	21C38	4600	2/15		22.8	
			3/01		24.8	
Corral Pass	21B13	6000	2/15		5.1	25.7
			3/01		5.5	28.6
Fish Lake	21B04	3371	2/15		22.7	
			3/01		25.1	
Green Lake	21C10	6000	2/15		14.1	23.5
			3/01		16.2	26.8
Grouse Camp	20B11	5385	2/15		14.8	18.1
			3/01		16.3	21.6
Morse Lake	21C17	5400	2/15		38.8	56.5
			3/01		45.6	64.0
White Pass E. Side	21C28A	4500	2/15		18.2	21.0
			3/01		20.7	24.7

GT = Ground Truth measurement at SNOTEL site

SNOTEL READINGS, MARCH 1, 1984 - APPENDIX 3

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average *

AHTANUM CREEK

Green Lake	21C10	6000	2/15		14.1	23.5
	GT		3/01		16.2	26.8

TOUCHET RIVER

Touchet # 2	17C5	5530	2/15			27.0
	GT		3/01	69	22.0	
			3/01		24.3	31.6

LEWIS RIVER

June Lake	22C09	3200	2/15			30.0
			3/01			30.9
Lone Pine Shelter	21C26	3800	2/15		25.7	33.2
			3/01		29.6	37.4
Plains of Abraham	22C01	4400	2/15		51.6	
			3/01		62.9	
Sheep Canyon	22C10	4050	2/16		22.1	
			3/01		29.4	
Spencer Meadow	21C20	3400	2/15		15.8	26.6
			3/01		17.6	28.7
Surprise Lake	21C13	4250	2/15		38.1	42.0
	GT		3/01		43.9	46.4

COWLITZ RIVER

Pigtail Peak	21C33	5900	2/15		33.6	39.8
			3/01		36.9	44.9
Potato Hill	21C14	4500	2/15		15.8	
			3/01		18.8	
Sheep Canyon	22C10	4050	2/16		22.5	
			3/01		29.4	
Strawberry Landing	22C08	3280	2/15			30.3
			3/01			32.8

GT = Ground Truth measurement at SNOTEL sites

SNOTEL READINGS, MARCH 1 1984 - APPENDIX 4

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average

NISQUALLY RIVER

Paradise Park	21C35	5500	2/15		44.8		
			3/01		33.0		

WHITE RIVER

Corral Pass	21B13	6000	2/15		5.1	25.7
			3/01		5.5	26.8
Morse Lake	21C17	5400	2/15		38.8	56.5
			3/01		45.6	64.0

GREEN RIVER

Cougar Mountain	21B42	3200	2/15		12.2	7.2
			2/29		14.6	5.3
Stampede Pass	21B10	3960	2/15		32.5	30.2
	GT		3/01		36.4	33.9

SNOQUALMIE RIVER

Olallie Meadows East	21B55	3960	2/15		37.7	41.0
			3/01		42.8	44.2

GT = Ground Truth measurements at SNOTEL sites

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Ministry of the Environment, Water
Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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